CLAIMS

1. A timepiece comprising:

a timepiece drive section having a timepiece circuit for forming a timepiece signal corresponding to the time of day, and a rotation output mechanism for outputting a rotation synchronous with the timepiece signal;

a first motion conversion mechanism for converting a rotation outputted by the timepiece drive section into a form of movement other than rotation; and

a time display section for displaying the time of day in accordance with the form of movement of the first movement conversion mechanism;

the first motion conversion mechanism configured to be a weight lifting mechanism having a drive body comprising a spiral drive surface whose axis is horizontal or inclining so that the drive body can be rotated about the axis by the timepiece drive section whereby a weight on the drive surface is driven to undergo translational movement from a lower position to an upper position.

2. A timepiece comprising:

a timepiece drive section having a timepiece circuit for forming a timepiece signal corresponding to the time of day, and a rotation output mechanism for outputting a rotation

synchronous with the timepiece signal;

a weight lifting mechanism for periodically lifting and successively discharging the weight from a lower position to an upper position, based on a rotation outputted by the timepiece drive section;

a rotating wheel intermittently rotated by the gravity of the weight intermittently brought to bear thereon through repetition of a cycle in which the weights discharged from the weight lifting mechanism are received sequentially according to the discharge timing, and after a weight moves over a predetermined angular range, it is discharged and ceases to exist; and

a time display section for displaying the time of day in accordance with intermittent rotation of the rotating wheel.

3. A timepiece according to claim 2, wherein the rotating wheel has at its outer periphery a plurality of receiving portions for receiving the weight, the weight lifting mechanism supplies the rotating wheel with a weight at a receiving portion at the upper portion of the weight lifting mechanism, whereby after the rotating wheel rotates a predetermined angle, the weight discharges from the receiving portion and is returned to a lower position by the lower portion of the weight lifting mechanism.

4. A timepiece according to claim 3, wherein the timepiece drive section is arranged to the rear of one of the group consisting of the weight lifting mechanism, the rotating wheel and the time display section, as viewed from in front of the time display.

5. A timepiece according to any one of claims 1 to 4, wherein the weight lifting mechanism has a drive body having a spiral drive surface having a horizontal or inclining axis so that the drive body can be rotated about the axis by the timepiece drive section whereby the weight on the drive surface is driven by rotation of the drive body to undergo translational movement from the lower position to the upper position.

6. A timepiece having a weight, weight lifting means for lifting the weight supplied in a lower position toward an upper position, a rotating wheel having, along its outer periphery, a plurality of receiving portions capable of supporting the weight, and an escapement mechanism for intermittently operating the rotating wheel, the timepiece characterized in that:

the weight lifted to the upper position by the weight lifting means is supplied to the receiving portion located

close by, and after the rotating wheel rotates a predetermined angle, the weight discharges from the receiving portion and is returned to the lower position located by the lower portion of the weight lifting means,

the weight lifting means configured to be a weight lifting mechanism having a drive body comprising a spiral drive surface whose axis is horizontal or inclining, and a rotation drive source for rotating the drive body about the axis, the weight driven on the drive surface is driven by rotation of the drive body to undergo translational movement from the lower position to the upper position.

7. A timepiece according to claim 6, wherein the weight lifting means has guide means for guiding the weight upward.

8. A timepiece according to claim 7, wherein the weight is to move upward while rotating on the drive surface.

9. A timepiece according to any one of claims 6 to 8, wherein the weight is a columnar body, a cylindrical body or a spherical body.

10. A timepiece according to any one of claims 6 to 8, wherein the axis of the drive body is set horizontal.

11. A timepiece according to claim 6, wherein the drive body has one pair of spiral strips arranged juxtaposed along the direction of the axis, the surfaces thereof constituting the drive surface,

further including support frames arranged on both sides of the pair of spiral members along the axis and supporting the weight, and a guide member arranged between the pair of spiral strips and having a guide edge extending radially.

12. A timepiece according to claim 6, wherein the drive body has one pair of plate members which are spiral shaped in plan view juxtaposed along the axis and whose end edges constitute the drive surfaces,

further including support frames arranged on both sides of the pair of plate members along the axis and supporting the weight, and a guide member arranged between the two plate members, extending radially.

13. A timepiece according to any one of claims 6 to 8, 11 and 12, wherein the receiving portion is in the form of a container having an opening opened continuously from the side opposite the direction of rotation to the outer peripheral side.

14. A timepiece according to claim 13, wherein from the

outer periphery of the bottom of the receiving portion an inclining surface is formed upwardly inclining toward the opening edge at the periphery of the opening.

15. A timepiece according to claim 13, wherein a protrusion is provided at the outer peripheral edge of the bottom of the receiving portion.

16. A timepiece according to any one of claims 6 to 8, 11 and 12, wherein the escapement mechanism has plural engaging points provided on the rotating wheel in the direction of rotation, a first lever structured so that it can engage with the engaging points over a predetermined angle range of the rotating wheel and pivotally supported so that when engaged with an engaging point a forward rotation of the rotating wheel causes the first lever to rotate, a second lever pivotally supported so that it can rotate between an engaging position where it can engage with the engaging point and a non-engaging position where it cannot engage with the engaging point so that, in the engaging position, the rotating wheel can be stopped from rotating forward by engagement of the second lever with the engaging point, and a third lever moving together with the first lever and capable of switching the second lever between the engaging position and the non-engaging position,

wherein, in a reference standard stop position of the rotating wheel, the second lever is in the engaging position and the rotating wheel is in a state allowing forward stepwise rotation up until it engages with the engaging point with the second lever,

when the rotating wheel begins to rotate forward from the reference standard stop position, and prior to the engagement of the engaging point with the second lever, the first lever is rotated by the engaging point and together with this action the third lever rotates so that the second lever is temporarily placed in non-engaging state by the third lever,

the first lever rotates further when the rotating wheel rotates further, whereby after the engaging point goes beyond the second lever, the third lever causes the second lever to return to the engaging position,

the first lever thereafter being caused to leave the engaging point and return to a former position.